

## LIST OF CLAIMS

Claims 1 - 27 (Previously Submitted)

Claims 28 - 40 (New)

1. (Previously Submitted) A coupler for adding or removing tubulars to and from a drill string while continuing to flow drilling fluid down the drill string comprising:

(a) casing means for defining a chamber;

(b) valve means for dividing said chamber into upper and lower portions and for placing said upper and lower portions in fluid communication when said valve is open;

(c) inlet and outlet means for flowing drilling fluid into and out of said chamber;

(d) first gripping means for gripping said tubulars;

(e) second gripping means for gripping said drill string;

and

(f) said first and second gripping means being radially movable into and out of engagement with said tubulars and said drill string, respectively.

2. (Previously Submitted) The coupler of Claim 1 wherein at least one of said first and second gripping means is positioned within said chamber.

3. (Previously Submitted) The coupler of Claim 1 wherein both of said first and second gripping means are positioned inside of said chamber.

4. (Previously Submitted) The coupler of Claim 1 wherein both of said first and second gripping means are positioned outside of said chamber.

5. (Previously Submitted) The coupler of Claim 1 wherein said chamber includes upper and lower BOP's for sealing said chamber against bore hole pressure.

6. (Previously Submitted) The coupler of Claim 1 further including slips positioned below said gripping means for restraining said string against downward movement.

7. (Previously Submitted) The coupler of Claim 1 wherein both of said first and second gripping means are positioned below said valve means.

8. (Previously Submitted) The coupler of Claim 4 wherein said chamber includes upper and lower BOP's for sealing against bore hole pressure.

9. (Previously Submitted) The coupler of Claim 1 wherein at least one of said first and second gripping means comprise motorized gripping means for rotating said tubular and said string relative to each other.

10. (Previously Submitted) The coupler of Claim 1 wherein both of said first and second gripping means comprise motorized grips.

11. (Previously Submitted) An apparatus for adding and removing tubulars to and from a drill string while continuing to flow drilling mud down the string into a bore hole, comprising:

- (a) a casing forming a pressure chamber and including fluid passage means for flowing drilling mud into said chamber;

- (b) said chamber having a top and bottom;

- (c) high pressure seals positioned at said top and bottom of said chamber capable of withstanding the pressure of said drilling mud in said chamber;

- (d) first radially movable grips for gripping said tubular;

- (e) second radially movable grips for gripping said drill string; and

- (f) rotary means for rotating said tubular and said drill string with respect to each other while continuing to flow drilling mud into said chamber and down said drill string into the bore hole.

12. (Previously Submitted) The apparatus of Claim 11 wherein said drill string includes an enlarged box, and including radially movable slip means for surrounding said drill string at a position below said enlarged box for locking said drill string against downward movement.

13. (Previously Submitted) The apparatus of Claim 11 including motorized means for rotating said first radially movable grips while adding and removing tubulars to and from said drill string.

14. (Previously Submitted) The apparatus of Claim 11 including motorized means for rotating said second radially movable grips and said drill string while adding and removing tubulars to and from said drill string.

15. (Previously Submitted) A coupler for adding or removing tubulars to and from a drill string while continuing to flow drilling fluid down the drill string comprising:

(a) casing means for defining a chamber;

(b) valve means for dividing said chamber into upper and lower portions and for placing said upper and lower portions in fluid communication when said valve is open;

(c) inlet and outlet means for flowing drilling fluid into and out of said chamber through said drill string;

(d) first gripping means for gripping said tubulars;

(e) second gripping means for gripping said drill string;  
(f) said first and second gripping means being slips  
radially movable into and out of engagement with said tubulars  
and said drill string, respectively.

16. (Previously Submitted) The coupler of Claim 15 wherein at  
least one of said first and second slips comprise motorized slip  
means for rotating said tubular and said string relative to each  
other.

17. (Previously Submitted) The coupler of Claim 16 wherein said  
first slips comprise said motorized slips.

18. (Previously Submitted) The coupler of Claim 15 wherein both  
of said first and second gripping means comprise motorized slips.

19. (Previously Submitted) A system for adding or removing  
tubulars to and from a drill string while continuing to flow  
drilling fluid down the drill string comprising:

- (a) casing means for defining a chamber;
- (b) valve means for dividing said chamber into upper and  
lower portions and for placing said upper and lower portions in  
fluid communication when said valve is open;
- (c) inlet means for flowing drilling fluid into said chamber  
and out of said chamber;

(d) first gripping means for gripping said tubulars;  
(e) second gripping means for gripping said drill string;  
(f) at least one of said first and second gripping means being radially movable into and out of engagement with one of said tubulars and said drill string.

20. (Previously Submitted) The coupler of Claim 19 wherein at least one of said first and second gripping means comprise motorized means for rotating at least one of said tubular and said string relative to the other.

21. (Previously Submitted) The coupler of Claim 20 wherein said first gripping means are motorized.

22. (Previously Submitted) The coupler of Claim 20 wherein both of said first and second gripping means are motorized.

23. (Previously Submitted) A system for adding or removing tubulars to and from a drill string while continuing to flow drilling fluid down the drill string comprising:

(a) casing means for defining a chamber;  
(b) valve means for dividing said chamber into upper and lower portions and for placing said upper and lower portions in fluid communication when said valve is open;

(c) inlet and outlet means for flowing drilling fluid into and out of said chamber;

(d) gripping means for gripping said drill string; and

(e) radially movable seal means for engaging and disengaging said tubulars or said drill string.

24. (Previously Submitted) The system of Claim 23 wherein said radially movable seal means engage and disengage said tubulars.

25. (Previously Submitted) The system of Claim 23 wherein said radially movable seal means engage and disengage said drill string.

26. (Previously Submitted) The system of Claim 23 wherein at least one of said radially movable seal means comprise an ROBP or pipe ram.

27. (Previously Submitted) The system of Claim 26 wherein both of said radially movable seal means comprise an ROBP or pipe means.

28. (New) A system comprising:

(a) first and second couplers;

(b) first and second hoist means connected to said first and second couplers for raising and lowering said first and second couplers individually;

(c) power means for raising and lowering said hoist means for performing hand-over-hand motions of said first and second couplers;

(d) each of said first and second couplers including fluid sealed housings and means for introducing and evacuating drilling fluid from said housings;

(e) upper slip means for securing a tubular against upward movement;

(f) openable and closeable divider means in said housings defining upper and lower chambers in said housing; and

(g) means of moving said tubular downwardly into rotational contact with said drill string for securing said tubular and said drill string together.

29. (New) The system of Claim 28 in combination with a rotary table, and in which said coupler is positioned below said rotary table.

30. (New) The coupler of Claim 28 including power means for opening said divider means for a distance sufficient for said upper slip means and said upper grip means to pass through said divider means.



31. (New) The coupler of Claim 28 including means for rotating an individual tubular and said drill string in relatively opposite directions.

32. (New) The coupler of Claim 31 wherein said means for rotating said tubular and said drill string rotate in the same direction at differential speeds.

33. (New) The coupler of Claim 28 including upper and lower grip means for gripping said tubular and said drill string respectively.

34. (New) A system comprising:

- (a) first and second couplers;

- (b) first and second hoist means connected to said first and second couplers for raising and lowering said first and second couplers individually; and

- (c) power means for raising and lowering said hoist means for raising and lowering said first and second couplers and move them horizontally in alternate steps to perform hand-over-hand motions of said couplers.

35. (New) The system of Claim 34 including:

- (a) a well head;

- (b) a BOP stack mounted above said well head;

- (c) said couplers comprising fluid-tight chambers;
- (d) each coupler including an upper annular seal;
- (e) each coupler including upper grip means for engaging a tubular and lower grip means for engaging a drill string;
- (f) each coupler including divider means forming two portions in said chamber;
- (g) each coupler including lower grip means and slip means for engaging a drill string to which said tubular is to be connected and lower annular preventers.

36. (New) A system comprising:

- (a) first and second couplers;
- (b) first and second hoist means connected to said first and second couplers for raising and lowering said first and second couplers individually; and
- (c) power means for raising and lowering said hoist means, and moving them horizontally for performing hand-over-hand motions of said first and second couplers.

37. (New) The system of Claim 36 wherein each of said first and second couplers include sealed housings and means for introducing drilling fluid into said housing.

38. (New) The system of Claim 37 upper slip means for securing a tubular against upward movement.

39. (New) The system of Claim 38 wherein each of said couplers include openable divider means and power means for opening said divider means a distance sufficient to pass said upper slip means.

40. (New) The system of Claim 36 in combination with:

- (a) a well head;
- (b) a BOP stack mounted above said well head;
- (c) said couplers comprising fluid-tight chambers;
- (d) each coupler including an upper annular preventer;
- (e) upper grip means for engaging a tubular and lower grip means for engaging a drill string;
- (f) blind ram preventers or diverters positioned in said chambers;
- (g) each coupler including lower grip means and slip means for engaging a drill string to which said tubular is to be connected and lower annular seals.